density loss processes, as a function of time, the measurement values being of medically accepted practical or theoretical clinical signs and symptoms of bone density loss, measuring bone marker values of serum or urine samples of the patient associated with bone density losses,

a'

recording the bone marker values over an input mask in an electronic data memory, and, by the following steps, processing the bone marker values relative to the reference values thereby to determine any significant bone density loss in the patient:

a) at the time of the analysis, copying all N available measured bone marker values M of the patient which were measured at times $t_1 \ldots t_n$ from the data memory over an interrogation function thereby to make the measured values available for further processing, measured bone marker values M (t_n; k) of K in the laboratory being determined after step x of the process at times $t_1 \ldots t_n$,

b) normalizing the measured values of the bone markers with respect to a first line in a table according to the equation

$$M^{*}(t_n;k) = \frac{M(t_n;k) - M(t_1;k)}{M(t_1;k)} \qquad k = 1,\ldots,K; \quad n = 1,\ldots,N$$

and converting the measurements as a function of time into months,

c) the normalized measured value being converted into a scalar quantity $D(t_n)$ for a graduated description of the course of the bone density, the equation

$$D(t_n) = \sqrt{\sum_{k=1}^{K} Wk \cdot \left(M^*(t_n;k)\right)^2}$$

defining the graduated description of the course of the relationship

d) from the evaluations of the progress determined, calculating by interpolation evaluations of the progress for those time sections of

$$D^*(t) = \frac{(t_n - t)\cdot D(n-1) + (t - t_{n-1})\cdot D(n)}{t_n - t_{n-1}} \quad , t_\in [t_{n-1}, t_n]$$

for which reference values are available,

e) from the interpolated evaluations of the progress, calculating similarity dimensions between the data by means of the function

$$A_j(t) = \sum_{m=1}^{M} \frac{t_m}{t_M} \cdot V_m \cdot \left(R_j(t_m - D^*(t_m)\right)^2$$

said function of this paragraph (e) being used to calculate a similarity dimension between the data, which is to be investigated, and all the

reference values, available in the database and, at the same time, similarity dimensions to the reference values and to the time in months being found,

f) from the similarity dimensions for all reference values, determining those reference values which have a high similarity in the mathematical sense, as follows:

greatest similarity: $$A^* = \min_{j=1,\ldots,J}\{A_j\}$$

positive alternative (+) $$A^+ = \min_{j=1,\ldots,J,\, A_j \neq A^*,\, R_j(t_N) > I_X(t_N)}\{A_j\}$$

negative alternative (-) $$A^- = \min_{j=1,\ldots,J,\, A_j \neq A^*,\, R_j(t_N) < I_X(t_N)}\{A_j\}$$

with subsequent output of the type description as text component for describing the situation;

g) deriving a predicted value from the three reference values of paragraph (f), if $B_1 = A^*$, $B_2 = A^+$, $B_3 = A^-$, the following expression

$$R(t) = \frac{1}{\sum_{i=1}^{3} B_i} \cdot \sum_{j=1}^{3}\left(\left(\sum_{i=1}^{3} B_i - B_j\right) \cdot R_j(t)\right)$$

being used for the predicted value at time t;

h) optimizing quantitative prediction of the bone density loss by assigning standard specifications to degrees of freedom given as functional parameters in the functional relation of $D(t_n)$ and $A_j(t)$ and fitting by statistical analysis of the reference values to practical experience; and

i) calculating the time at which, according to said quantitative prediction the percentage deviation is greater than a specified threshold value, this time being the starting point for planning scheduling of a next investigation.

2. (Amended) The method of claim 1, wherein the degrees of freedom, given as function parameters in the functional relationship of $D(t_n)$ and $A_j(t)$, are filled in by the mathematical method of least squares so that specified sequences are taken into consideration in a best way for reference values.

3. (Amended) The method of claim 1, wherein the reference values are calculated values from an analytical mathematically assumed course of bone density loss.

4. (Amended) The method of claim 1, wherein the reference values empirical values from imaginary, assumed processes.